

Sept. 5, 1961

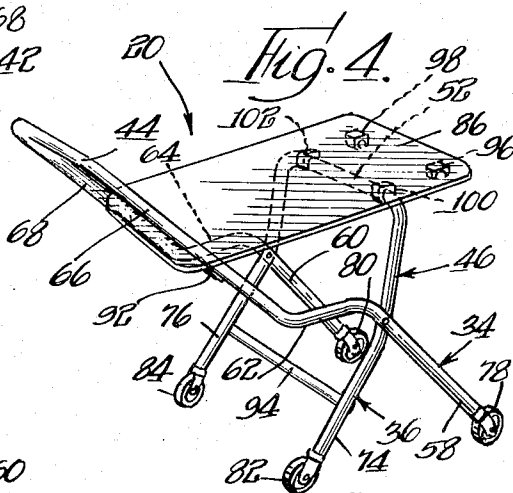
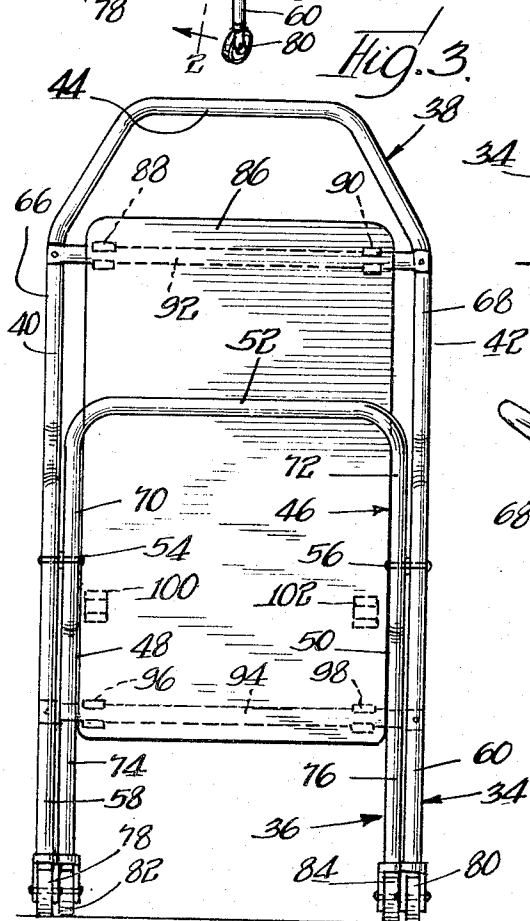
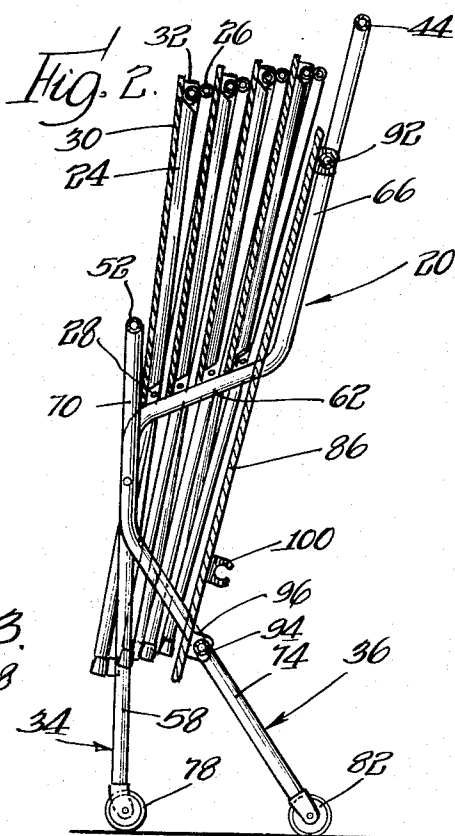
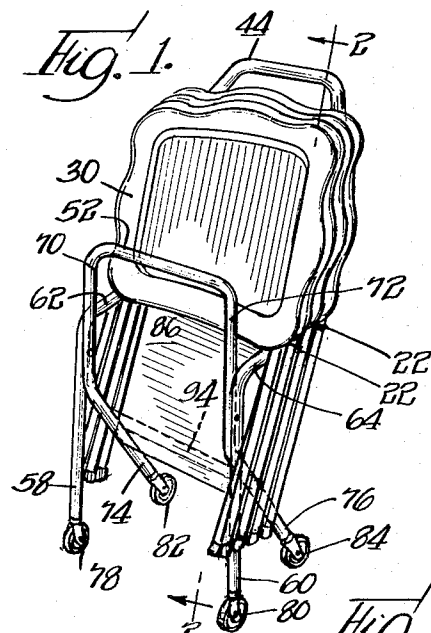
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2,998,884

COMBINED TABLE AND RACK

Filed Aug. 12, 1960

4 Sheets-Sheet 1



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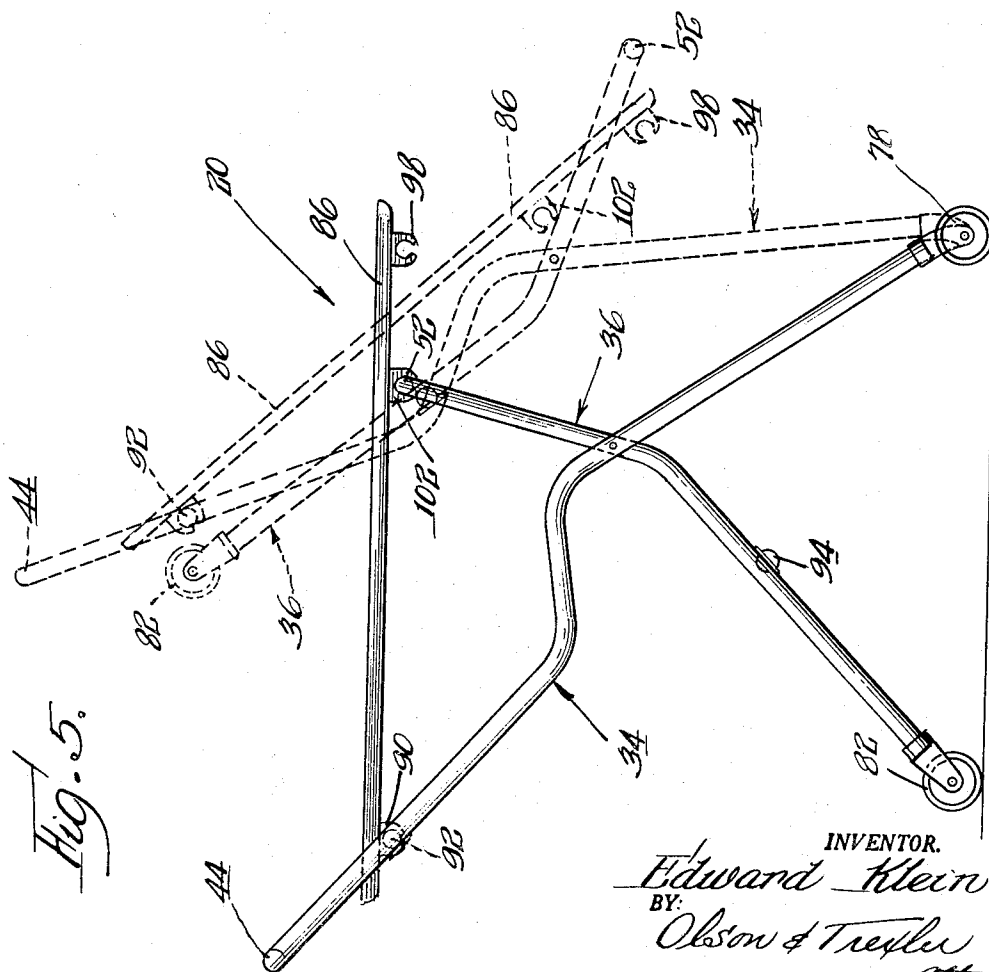
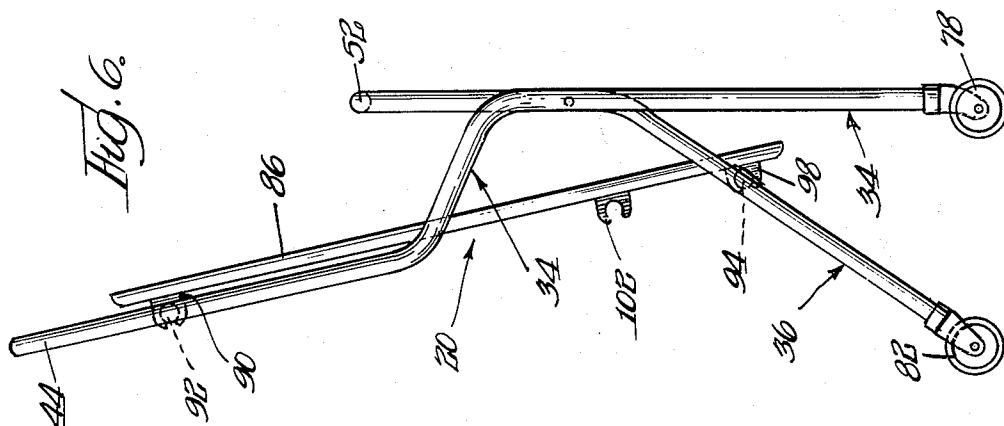
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4 Sheets-Sheet 2



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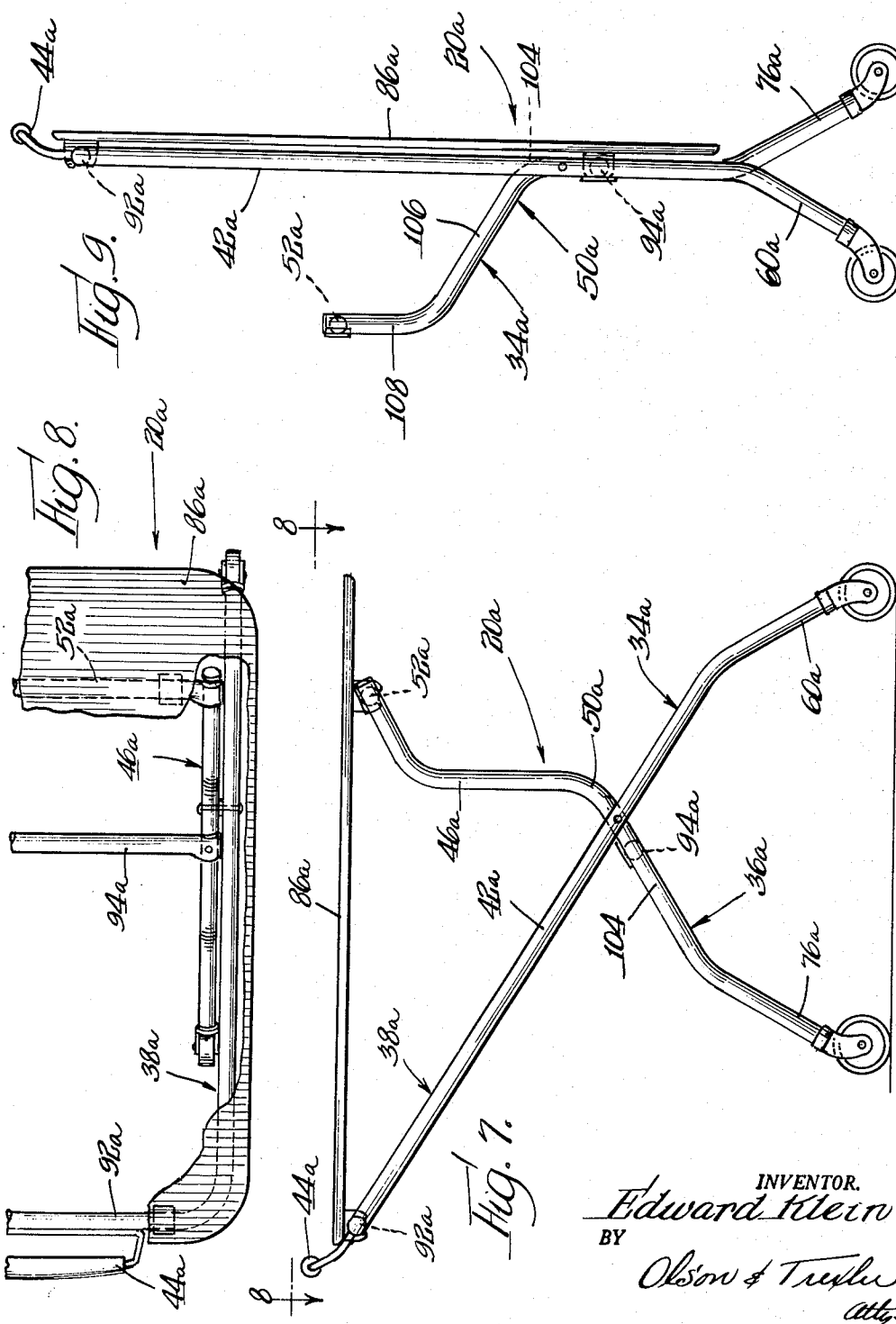
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COMBINED TABLE AND RACK

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4 Sheets-Sheet 3



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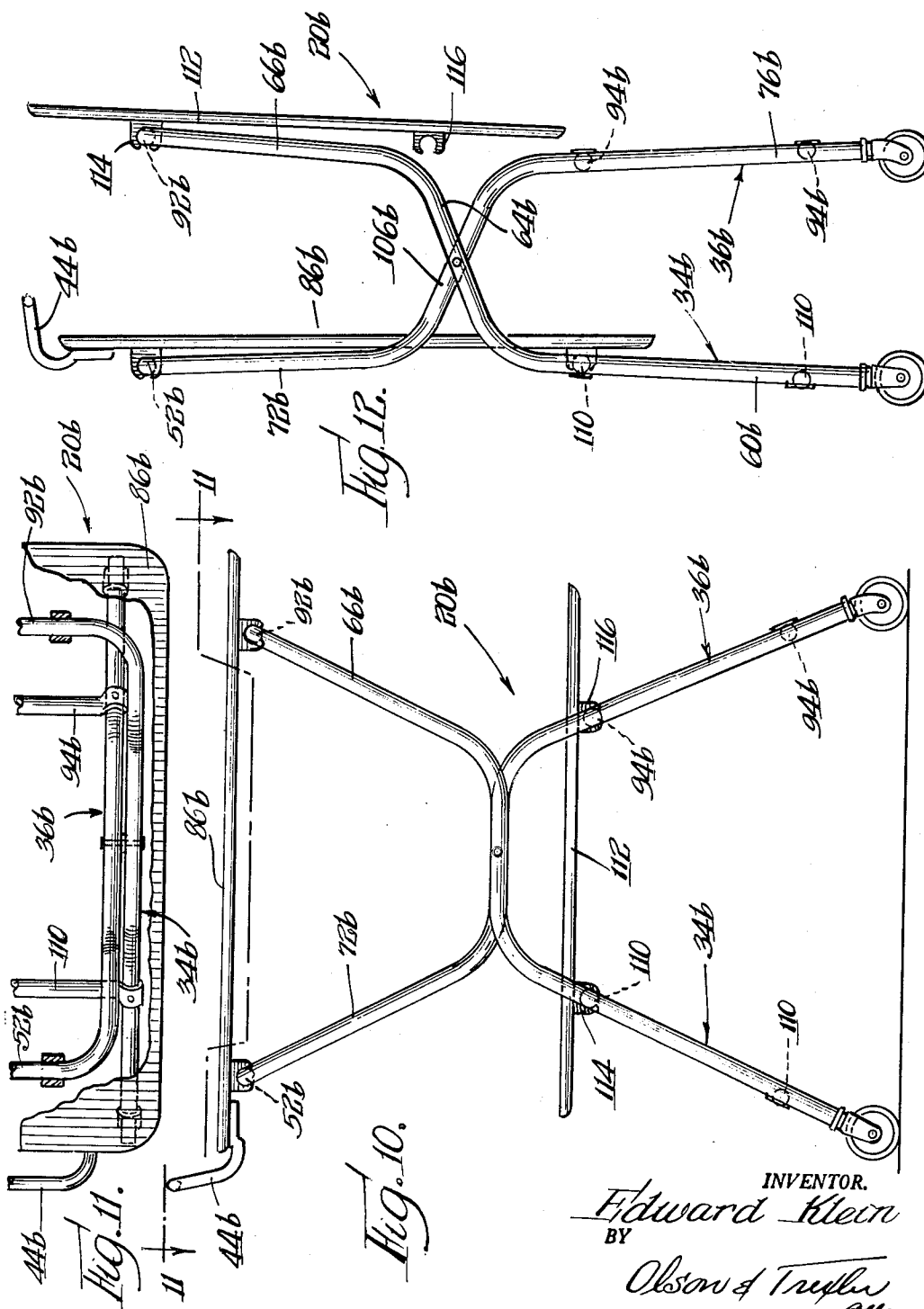
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COMBINED TABLE AND RACK

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4 Sheets-Sheet 4



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2,998,884

COMBINED TABLE AND RACK

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The present invention relates to foldable table structures, and more particularly to novel foldable table structures which may be selectively used as a table and as a storage rack for articles such as foldable tray tables and the like.

It is an important object of the present invention to provide a novel structure which may be selectively manipulated so as to provide a compact storage rack requiring a minimum of floor and storage space or to provide a table which may be used for serving or any other desired purpose.

Still another object of the present invention is to provide a novel combined table and storage rack structure having a pair of frame means and table-top means which pair of frame means is adapted to be manipulated between a rack-providing position and a table-providing position, and which table-top means is adapted to be utilized for locking said pair of frame means in either of said positions.

A further object of the present invention is to provide a novel structure of the above described type which is of simple and economical construction.

Other objects and advantages of the present invention will become apparent from the following description and the accompanying drawings wherein:

FIG. 1 is a perspective view showing a combined table and rack structure incorporating features of the present invention and a set of folding tray tables disposed thereon;

FIG. 2 is an enlarged sectional view taken generally along line 2-2 in FIG. 1;

FIG. 3 is a front elevational view of the combined table and rack structure in the rack-providing condition shown in FIGS. 1 and 2;

FIG. 4 is a perspective view showing the combined table and rack structure of FIGS. 1-3 in its table-providing condition;

FIG. 5 is an enlarged side elevation view of the structure in the table-providing condition shown in FIG. 4, and further shows (in broken lines) the manner of manipulating the structure between the table-providing condition and the rack-providing condition;

FIG. 6 is a side elevational view showing the structure of FIGS. 1-5 in the rack-providing condition;

FIG. 7 is a side elevational view similar to FIG. 5 but showing a modified form of the present invention;

FIG. 8 is a fragmentary plan view taken generally along line 8-8 in FIG. 7 and partially broken away in order to show portions of the structure more clearly;

FIG. 9 is a side elevational view of the combined rack and table structure of FIGS. 7 and 8 in the rack-providing condition;

FIG. 10 is a side elevational view of another modified form of the rack and table structure in the table-providing condition;

FIG. 11 is a fragmentary sectional view taken generally along line 11-11 in FIG. 10; and

FIG. 12 is a side elevational view of the combined table and rack structure of FIGS. 10 and 11 in the rack-providing condition.

Referring now more specifically to the drawings wherein like parts are designated by the same numerals throughout the various figures, a combined table and

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rack structure 20 incorporating one embodiment of the present invention is shown in FIGS. 1-6. As shown in FIGS. 1 and 2 the unit 20 is adapted to function as a storage rack for supporting a plurality of foldable tray tables 22 and the like. The tray table 22 may be of any known construction and therefore need not be described in detail. It suffices to state that each of the foldable tray tables includes a pair of inverted U-shaped frame members 24 and 26 having intermediate portions suitably pivotally connected by pin means 28. Each of the foldable table structures 22 includes a tray or table-top member 30 having suitable clip elements 32 affixed thereto so that it may be detachably connected with transverse or bight portions of the U-shaped frame members.

The combined rack and table unit 20 comprises first and second frame means 34 and 36 which are pivotally connected in the manner described below so that they may be manipulated between the generally upright rack-providing position shown in FIGS. 1-3 and 6 and the relatively spread apart table-providing positions shown in FIGS. 4 and 5. In this embodiment the frame means 34 comprises a one-piece member 38 which, from the front elevational view shown in FIG. 3, has a generally inverted U-shaped appearance. The frame member 38 includes side or leg portions 40 and 42 having their upper ends joined by a transverse or bight portion 44. The frame means 36 similarly includes a frame member 46 having a generally inverted U-shaped appearance as seen in FIG. 3 and including opposite leg or side portions 48 and 50 which are joined at their upper ends by a transverse or bight portion 52. As shown in the drawings the frame member 46 is substantially shorter than the frame member 38 and is also narrower than the frame member 38 so that the leg portions 48 and 50 respectively fit within the leg portions 40 and 42. The adjacent leg portions 40 and 48 are pivotally interconnected intermediate their ends by suitable pin means 54 and the opposite adjacent leg portions 42 and 50 are similarly pivotally connected by pin means 56.

When the frame means are in the rack-providing position shown in FIGS. 1-3 and 6, lower end sections 58 and 60 of the sides or leg portions of the frame member 38 are preferably disposed substantially in a vertical plane. Upper ends of the sections 58 and 60 merge with intermediate sections 62 and 64 respectively which extend laterally from the common plane of the sections 58 and 60. As shown in FIGS. 1 and 2 the intermediate laterally extending sections 62 and 64 project rearwardly and also upwardly from the sections 58 and 60 when the unit is to serve as a rack for providing rest or support elements for engagement with lower edges of the trays 30 of the tables 22. Upper ends of the support sections 62 and 64 merge with upper end portions 66 and 68 of the side or leg members 40 and 42, which upper end portions are generally upright but preferably slightly rearwardly inclined and provide a back rest for the tray tables 22 when the unit 20 is serving as a rack as shown best in FIG. 2.

The side or leg portions 48 and 50 of the frame member 46 are formed so that they respectively include upper end portions 70 and 72 which are preferably disposed substantially in the vertical plane of the leg sections 58 and 60 when the unit is in condition to serve as a storage rack as shown in FIGS. 1-3 and 6. At points below the pivots 54 and 56 the sections 70 and 72 merge with lower end sections 74 and 76 respectively which extend laterally rearwardly and downwardly. Preferably the arrangement is such that the lower terminal ends of the leg sections 74 and 76 are spaced rearwardly from the lower ends of the leg sections 58 and 60 a distance which is at least as great as the lateral extent of the tray rest or

support sections 62 and 64 so as to provide the rack with the desired stability. Preferably casters or other wheel means 78 and 80 are secured to the lower ends of the leg sections 58 and 60 and similar caster or wheel means 82 and 84 are secured to the lower ends of the leg sections 74 and 76 so that the unit may be easily moved about both when serving as a rack and as a table.

The unit 20 includes a tray or table-top member 86 having a pair of resilient clip elements 88 and 90 secured to the under side thereof adjacent one end. The frame means 34 includes a transverse frame member 92 extending between and secured to the upper side sections 66 and 68. As shown in the drawings the clip elements 88 and 90 are adapted to be applied to the transverse frame member 92 for detachably and pivotally connecting the tray or table-top to the transverse frame member.

In order releasably to secure the frame means 34 and 36 in their generally upright rack-providing position, means is provided for detachably connecting a lower end of the tray or table-top member 86 with the frame means 36 while the upper end thereof remains connected by the clip elements 88 and 90 to the transverse frame member 92. This means comprises another transverse frame member 94 extending between and secured to the lower leg sections 74 and 76 of the frame means 36. In addition clip elements 96 and 98 are secured to the under side of the table-top member 86 adjacent the lower end thereof for detachable connection to the transverse frame member 94. With the table-top member connected between the transverse frame members 92 and 94 as shown in FIGS. 1-3 and 6, it is seen that the table-top member provides a rigid strut between the frame means 34 and 36 which securely retains these frame means in the rack-providing condition.

In order to convert the unit 20 from the storage rack shown in FIGS. 1-3 and 6 to the table shown in FIGS. 4 and 5, the lower edge of the table or tray member 86 is first pulled forwardly so as to disengage the clips 96 and 98 from the transverse frame member 94. Then the frame means 34 and 36 are manipulated relative to each other so that the lower ends of the leg sections 74 and 76 of the frame means 36 are moved to positions adjacent the upper ends of the frame sections 66 and 68 of the frame means 34. In other words, the frame means are manipulated from the position shown in FIG. 6 substantially to the broken line position shown in FIG. 5. When the frame means are in the broken line position, sufficient clearance is provided between the transverse portion 52 of the frame means 36 and the adjacent end of the table-top or tray member 86 to enable the table-top member to be lifted to a position above the transverse portion 52. After the table-top or tray member 86 has been lifted above the transverse frame portion 52, the frame means are manipulated toward the position shown in FIG. 5 and clip elements 100 and 102 affixed to the under side of the table-top member are snapped onto the transverse frame portion 52. The table-top member then again serves to secure the frame means 34 and 36 in the desired adjusted position, in which position the table-top member will preferably be disposed substantially horizontally. Of course, the unit may again be converted to the rack-providing condition merely by reversing the above described manipulations of the parts.

In order to facilitate movement of the unit 20 both when the unit is serving as a rack and as a table, it will be noted that the transverse or bight portion 44 of the frame means 34 extends substantially above and beyond the transverse frame member 92. Thus, the bight portion 44 provides a handle which is located above the upper edges of the tray table 22 as shown best in FIG. 2 when the unit is serving as a rack and which is also located well above the table-top member or tray 86, as shown best in FIG. 5, when the unit is serving as a table.

In FIGS. 7, 8 and 9 there is shown a modified form of the present invention which is similar to the structure

described above as indicated by the application of identical reference numerals with the suffix "a" added to corresponding elements. In this embodiment the transverse member 92a to which one end of the table-top or tray member 86a is clipped is formed integrally with the side portions of the U-shaped frame member 38a, while the handle means 44a is provided as a separate member which is secured to the transverse member 92a in the manner shown. In order to further illustrate modifications which may be made, it will be noted that the transverse member 52a of the generally U-shaped structure 46a is formed as a separate member which is welded or otherwise suitably secured to the upper ends of the side portions of the generally U-shaped structure 46a.

The embodiments of FIGS. 7-9 further differ from the structure described above in the particular formation of the side or leg portions of the frame means. While only one side of each of the frame means 34a and 36a is visible in the views shown in FIGS. 7-9, it will be appreciated that the side or leg portion of the frame means 34a which is not shown, is identical to the side or leg portion 42a which is shown and, similarly, the side or leg portion of the frame means 36a which is not shown is identical to the side or leg portion 50a which is shown.

Referring particularly to FIG. 9, it is seen that the frame means 36a is substantially simplified in that the side or leg portion 42a is straight throughout a major portion of its length. When the unit is in the rack-providing condition shown in FIG. 9, this major portion of the side or leg member 42a is preferably disposed substantially in a vertical plane. A lower end section 60a of the side portion 42a and a corresponding lower end section of the opposite side portion which is not shown, are bent forwardly and downwardly so as to locate casters or other floor engaging elements at their lower terminal ends well in front of the above mentioned vertical plane.

The side frame or leg portions of the frame means 36a are provided with intermediate sections 104 which will be located substantially in the vertical plane of the side or leg portion of the frame means 34a when the unit is in the rack-providing condition shown in FIG. 9. As shown in the drawings the lower end of the section 104 of the side or leg portion 50a merges with the section 76a which is bent rearwardly and extends laterally and downwardly to position the caster or floor engaging element at the lower end thereof well behind the above mentioned vertical plane when the unit is in the rack-providing condition, as shown in FIG. 9. Of course, the side or leg portion opposite from the leg portion 50a is provided with a lower end section identical to the section 76a.

Upper ends of the intermediate sections 104 of both the leg portion 50a and the leg portion corresponding thereto which is not shown, merge with sections 106 which extend forwardly of the above mentioned plane when the unit is in the rack-providing condition so as to receive and support one or more folded tray tables. The sections 106 in turn merge with substantially upper end sections both of which may serve to retain the tray tables on the sections 106.

It will be appreciated that by selectively engaging the clip elements on the tray or table-top member 86a with the transverse frame members, the unit 20a may be releasably retained in either the rack-providing condition shown in FIG. 9 or the table-providing condition shown in FIGS. 7 and 8. It will also be observed that the particular proportioning and arrangement of the elements of this embodiment enables one of the sets of clip members of the previously described embodiment to be eliminated.

FIGS. 10-12 show another modification of the present invention which is similar to the structures described above as indicated by the application of identical reference numerals with the suffix "b" added to corresponding elements. One important difference of this embodiment over the structures described above is that the frame

means 34 and 36 are substantially identically formed so that the unit provides a symmetrical appearance both in serving as a rack as shown in FIG. 12, and as a table as shown in FIGS. 10 and 11. More specifically, the side or leg portions of the U-shaped frame members which are shown in FIGS. 10-12 respectively include substantially straight or end portions 60b and 76b which are spaced from each other and which merge with crossing intermediate sections 64b and 106b. It will be appreciated that the intermediate sections 64b and 106b provide support elements on which edges of the trays of the tray tables 22 may rest for storage purposes. Upper ends of the intermediate sections 64b and 106b merge with substantially straight upper end sections 66b and 72b respectively. As shown in FIG. 12, the upper end sections 66b and 72b are laterally offset from each other a distance closely similar to the spacing between the lower end sections 60b and 76b when the unit is in its rack-providing condition.

In this embodiment the table-top member or tray 36b is adapted to be snapped onto the transverse portions 52b and 92b, forming the upper ends or bight portions of the generally U-shaped frame members as shown in FIGS. 10 and 11, in order to secure the elements of the unit in position to provide a table structure. The table-top member is also adapted to be secured between one of the uppermost transverse portions and another transverse frame member extending between lower end sections of one of the U-shaped frame members in order to secure the unit in the rack-providing condition as shown in FIG. 12. In the drawing the table-top member is shown connected between the upper transverse frame portion 52b of the frame means 36b and a lower transverse frame member 110 of the frame means 34b. However, it is understood that the tray might alternatively be connected between the upper transverse member 92b of the frame means 34b and the lower transverse frame member 94b of the frame means 36b.

If desired the unit 20b may be provided with a second tray member 112 having suitable clip means 114 and 116 secured thereto. This tray is adapted to be snapped onto the transverse frame members 94b and 110 when the unit 20b is in condition to serve as a table, as shown in FIGS. 10 and 11, so as to provide the table with a lower shelf. The tray member 112 may be stored by snapping it to the upper transverse frame member 92b when the unit is in the rack-providing condition as shown in FIG. 12.

While the preferred forms of the present invention have been shown and described herein, it is obvious that many structural details may be changed without departing from the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A unit selectively usable as a table and as a rack for supporting articles such as folded tray tables and the like, comprising first and second frame means pivotally connected together intermediate their ends and manually movable between a first relatively upright rack providing position and a second relatively inclined and spread apart table-providing position, one of said frame means including a laterally extending portion when said frame means are in said first position for receiving and supporting articles such as tray tables and the like, and table top means selectively connectable between said first and second frame means when said frame means are in said first position and when said frame means are in said second position.

2. A unit selectively usable as a table and as a rack for supporting articles such as folded tray tables and the like, comprising first and second frame structures, each of which includes a pair of side frame portions respectively pivotally connected to the side frame portions of the other frame structure intermediate their ends and manually movable between a first relatively upright rack-providing position and a second relatively inclined and

spread apart table-providing position, each of said frame structures including a transverse frame member above said pivotal connections, at least one of said frame structures including a second transverse frame member below said pivotal connections, and table-top means selectively connectable between said first mentioned transverse members when said frame structures are in said second position for providing a table and between said last mentioned transverse frame member on said one frame structure and the first mentioned transverse frame member of the other frame structure when said frame structures are in said first rack-providing position.

3. A unit, as defined in claim 2, wherein lower ends of said side frame portions of said first frame structure are spaced laterally a predetermined distance from lower ends of the side frame portions of said second frame structure when said frame structures are in said first position and a greater distance when said frame structures are in said second position.

4. A unit selectively usable as a table and as a rack for supporting articles such as folded tray tables and the like, comprising first and second frame structures having a pivotal connection therebetween intermediate their ends and respectively including a first pair of side frame portions and a second pair of side frame portions manually movable between a first relatively upright rack-providing position and a second relatively inclined and spread apart table-providing position, the side frame portions of one of said pairs including intermediate sections which extend generally laterally when said frame structures are in said first position for providing supports for receiving articles such as folded tray tables and the like, each of said frame structures including transverse frame members extending between its pair of side frame portions adjacent upper ends thereof, table-top means for extending between and connecting said transverse frame members when said frame structures are in said second position for providing a table, means for connecting said table-top means with said transverse frame members, said connecting means including means for releasably connecting the table-top means with at least one of said transverse frame members, and means on the frame structure including said one transverse member and connectable with said table-top means when said frame structures are in said first rack-providing position.

5. A unit, as defined in claim 4, wherein said side frame portions of both of said frame structures include sections extending above said laterally extending sections when said frame structures are in said generally upright rack-providing position.

6. A unit, as defined in claim 4, wherein said last mentioned means connectable with the table-top means when the frame structures are in said first position includes an additional transverse frame member extending between and connected to lower end sections of the side frame portions of its associated frame structure.

7. A unit, as defined in claim 6, wherein said releasable connecting means is engageable with said last mentioned transverse frame member.

8. A unit, as defined in claim 6, which includes additional releasable connecting means on said table-top means cooperatively engageable with said last mentioned transverse frame member.

9. A unit, as defined in claim 4, wherein said side frame portions of the frame structure having said laterally extending intermediate sections includes lower end sections extending substantially vertically downwardly from said intermediate sections when the frame structures are in said first position, and upper end sections extending generally upwardly and inclined slightly rearwardly from said intermediate sections, the side frame portions of the other said frame structures including upper end sections extending substantially upwardly and at least slightly above said intermediate sections, and lower end sections extending downwardly and substantially rearwardly from last mentioned upper end sections.

10. A unit, as defined in claim 4, wherein said side frame portions having said laterally extending intermediate sections, include additional sections extending substantially vertically downwardly from said intermediate sections when the frame structures are in said first rack-providing position, said last mentioned sections including lower end portions deflected rearwardly, and said side frame portions of the other of said frame structures including sections disposed substantially vertically when said frame structures are in said first position and extending above and below said intermediate sections, said last mentioned vertical sections including lower end portions deflected forwardly.

11. A unit, as defined in claim 4, wherein said side frame portions of both of said frame structures include intermediate laterally extending sections for supporting articles such as folded tray tables and the like, lower end sections extending downwardly from said intermediate sections and upper end sections extending upwardly from said intermediate sections.

12. A unit, as defined in claim 11, which includes a second top member, and means for connecting said second top member between the lower end sections of said first and second frame structures when said frame structures are in said second table-providing position.

13. A unit selectively usable as a table and as a rack for supporting articles such as folded tray tables and the like, comprising first and second frame structures pivotally connected together intermediate their ends and manually movable between a first relatively upright rack-providing position and a second relatively inclined and spread apart table-providing position, one of said frame structures including a generally laterally extending portion when said frame structures are in said first position for receiving and supporting articles such as tray tables and the like, and table-top means pivotally connected to an upper portion of one of said frame structures and selectively connectable to a lower portion of the other of said frame structures when said frame structures are in said first position and an upper portion of said other of said frame structures when the frame structures are in said second position.

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